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CURRENT SUPPORT BRIEF

THE ALUMINUM INDUSTRY OF COMMUNIST CHINA GROWS UP

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THE ALUMINUM INDUSTRY OF COMMUNIST CHINA GROWS UP

Today, Communist China possesses a rapidly growing, technically modern aluminum industry that has already achieved a significant level of output. The industry is of recent origin--production began in the last quarter of 1954--and has been built on a raw material base that would not be suitable for exploitation economically under the competitive conditions of the Free World. Because of the need to use raw materials of very poor quality, technology of a very advanced type had to be developed and adopted by this industry.

From a meager level of output in 1954 of only 2,000 tons, the industry raised its output by 1959 to 70,400 tons. 1/ China thus had become the second largest aluminum producer in the bloc: 2/

1959 Production

<u>Country</u>	<u>Metric Tons</u>
USSR	600,000
China	70,400
Hungary	45,700
Czechoslovakia	41,000
East Germany	35,300
Poland	22,800

Plans for the next five years indicate that the level of output will continue to expand at a very fast pace. Output planned for 1962 is 100,000 to 120,000 tons, 3/ and for 1965 is 180,000 tons. 4/ In view of the magnitude of present construction of new production capacity, the goals planned are believed conservative.

Through 1957, when 39,000 tons of aluminum were produced in China, 5/ all of the output was obtained from one plant, at Fushun. 6/ Subsequently, however, the theoretical capacity of the Fushun plant has been raised to about 60,000 tons annually, 7/ and the construction elsewhere of a series of new facilities, large and small, has been undertaken. Some of the new facilities are in early stages of construction, some are nearly complete, and some have begun limited operations. When all are completed, the total designed capacity for aluminum production in Communist China will be excess of 270,000 tons. Although the locations in some instances are not known, new mine capacity and capacity for alumina output--an intermediate product--sufficient to satisfy the needs of the aluminum facilities also are under construction.

In developing a satisfactory aluminum industry, Communist China has had to overcome serious technological difficulties, relating primarily to the use of inferior indigenous raw materials. Almost none of the ores of aluminum available in Communist China are

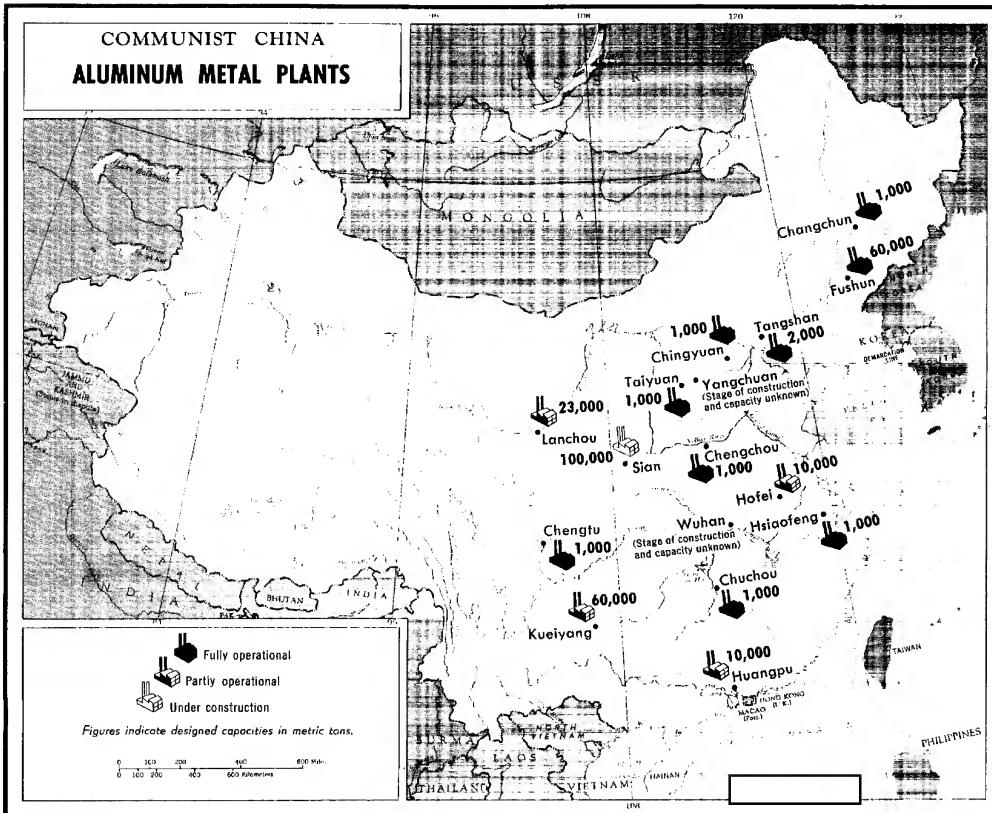
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amenable to processing by methods used in the Free World. The Chinese ores, which in the main consist of clays and shales, contain a large portion of silica. 8/ When these ores are processed by conventional western methods, the silica unites with part of the aluminum in the ores and caustic soda, an essential input in the process, to form an insoluble mass which must be discarded. The result is the loss of much of the aluminum and the waste of the caustic soda. Furthermore, aluminum metal that is recovered is contaminated with silicon. 9/

Consequently, the development of a method for removing the silica efficiently and relatively cheaply was essential to the Chinese aluminum industry. This requires an additional process, and the Chinese have adopted the so-called "semi-wet and semi-dry" process, originally developed by the Japanese and greatly improved by the Soviets. In essence, this preparatory process is a combination of the "lime-soda-sinter" process and the "scrap iron smelting" process. In the "semi-wet and semi-dry" process as now used in China, lime, soda, and scrap iron (possibly crude iron from "native" blast furnaces) are added to the ore and heated. 10/ The iron unites with silica to form a crude ferrosilicon, which then can be removed. The lime and soda also aid in the removal of silica and result in the formation of a readily soluble alumina clinker that can be processed by conventional methods. 11/

Figures showing money costs for the production of aluminum in Communist China are not available. Claims of significant achievements in improved efficiency and reduction in real costs have been made repeatedly in the Chinese press. Nevertheless, the rate of metal recovery in the Chinese industry admittedly remains below that of Free World industry. 12/ Furthermore, inherent in the process



25X1

31297 8-60

15 August 1960

CIA/RR CB-60-44

Page 3

CONFIDENTIAL

CONFIDENTIAL

used in China are requirements for large quantities of iron scrap and lime, and larger quantities of caustic soda and fuel than are used in Free World practice. In addition, special facilities are required and the materials handling problem is increased. All of which drives costs up.

Communist China had to import about 10 percent of its new aluminum supply in 1959. The ability to satisfy requirements for aluminum entirely from domestic sources is considered by the Chinese to be extremely important. Aluminum is an essential to many sectors of the industrial economy and has numerous military applications, the manufacture of aircraft being the most obvious. The achievement of self-sufficiency appears to be obtainable in the immediate future.

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Next 2 Page(s) In Document Exempt